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LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT PAPER NUMBER

1765

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,499

Applicant(s)

KONG ET AL.

Examiner

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) 10-30 and 37-72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 31-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 10-30 and 37-72 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9 and 31-36, drawn to an etching composition, classified in class 252, subclass 79.1.
 - II. Claims 10-30 and 37-40, drawn to a method of etching, classified in class 438, subclass 745.
 - III. Claims 41-72, drawn to a substrate, classified in class 438, subclass 1*.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product such as one that does not require a composition that comprises an inhibitor.
3. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case that the process as claimed can be used to

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make other and materially different product such as one that does not require making a polymer substrate.

4. Inventions I and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are unrelated because the etching composition of invention I comprises chemicals that are used to remove semiconductor films whereas the substrate of invention III is made up of semiconductor materials.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for Group I and Group III is not required for Group III, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with Stephen B. Goldman on May 6, 2002 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-9 and 31-36. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-30 and 37-72 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

9. The information disclosure statement filed August 1, 2001 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because document number AL, which is a Japanese patent lacks an English translation. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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11. Claim 1, 2, 4-8, 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Walsh (US 5,478,462).

Walsh teaches, "Ten 4 inch by 6 inch prepunched sheets of 200VN Kapton polyimide film were immersed for one minute with no agitation in the one-phase etchant solution comprising 35.5 wt. % KOH as (45% w/w), 10.6 wt % ethylenediamine, 10.6 wt. % ethylene glycol, the remaining water" (column 14, line 33-37). "The alkali metal hydroxide can comprise potassium hydroxide, . . . The concentration of hydroxide is between about 25 and 50 % by weight and preferably between about 25 and 50 percent by weight. The concentration of diamine . . . is between about 5 and 20 percent by weight, preferably between about 8 and 12 percent by weight. The concentration of the glycol compound is . . . between about 5 and 20 percent by weight, preferably between 8 and 12 percent by weight" (column 9, lines 17-31). The aforementioned reads on,

A composition for etching a polymer substrate comprising a dihydric alcohol having from two to five carbon atoms, a hydroxide compound selected from the group consisting of lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, barium hydroxide, strontium hydroxide and mixtures thereof, and water, **as in claim 1;**

wherein said dihydric alcohol comprises glycol and said hydroxide comprises potassium hydroxide, **as in claim 2.**

wherein said dihydric alcohol and said water are present in a ratio of from about 0.5:1 to about 8.5:1, **as in claim 4.**

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wherein said hydroxide compound is present in an amount of from about 40 to about 80 grams per 100 ml of dihydric alcohol and water solution, **as in claim 5**;

wherein said hydroxide compound is present in an amount of from about 40 to about 80 grams per 100 ml of dihydric alcohol and water solution, **as in claim 6**;

wherein said water comprises deionized water, **as in claim 7**;

A composition for etching a polymer substrate comprising glycol, potassium hydroxide and deionized water, wherein said glycol and said water are present in a ratio of from about 0.5:1 to about 8.5:1 and said potassium hydroxide is present in an amount of from about 40 to about 80 grams per 100 ml of glycol and water solution, **as in claim 8**; and

wherein said substrate comprises a polyimide substrate, **in claims 35 and 36**.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh ('462) as applied to claim 1 and 8 respectively above, and further in view of Glenning et al. (US 4,857,143).

Walsh differs in failing to teach an inhibitor selected from the group consisting of NaF, CH₃COONa, CH₃COOK, K₂CO₃, Na₂CO₃, K₃PO₄, hexamethylene tetramine, and mixtures thereof, in claims 3 and 9.

Glenning teaches, "exposed polyimide is etched such as using a solution at least about 3 molar in potassium hydroxide and at least about 0.5 molar in potassium carbonate" (Abstract), which is the same as applicant's inhibitor as claimed in the present invention.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Walsh's etchant by adding potassium carbonate as taught by Glenning for the purpose of reducing the undercutting of a resist pattern on the polyimide (Abstract).

14. Claims 31-32 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh ('462) as applied to claims 1 and 8 respectively above, and further in view of George (US 3,725,150).

Walsh differs in failing to teach said composition has a boiling point in the range of from about 240°F. to about 300°F and 260°F to about 280°F.

George teaches, "It is within the knowledge of persons skilled in the art to control the extent of the etch by manipulating the parameters of concentration, time of exposure and temperature appropriate to the etchant selected" (column 3, lines 30-34), which provides evidence that manipulating (varying) the etchant temperature is a so-called "result effective variable."

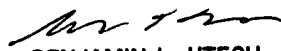
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It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Walsh's composition by manipulating (varying) the temperature as taught by George, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 5205 USPQ 215) CCPA 180).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner can normally be reached on First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

ltue
May 16, 2003


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700